

We Claim:

1. A sheet transport drum for a machine processing printing-material sheets, the sheet transport drum comprising:

at least one sheet support surface having pneumatic grooves formed therein, said sheet support surface having a first comb segment with segment prongs and a second comb segment with segment prongs, said pneumatic grooves being introduced into said segment prongs of at least one of said first and second comb segments.

2. The sheet transport drum according to claim 1, wherein said pneumatic grooves are introduced both into said segment prongs of said first comb segment and into said segment prongs of said second comb segment.

3. The sheet transport drum according to claim 1, wherein each of said pneumatic grooves is formed as a suction and restrictor groove, to which a vacuum sucking on a respective printing-material sheet can be applied and which is profiled such that the vacuum is maintained, at least to an extent which is sufficient to suck on the respective printing-material sheet, even given incomplete coverage of said suction and restrictor groove by the respective printing-material sheet.

4. The sheet transport drum according to claim 1, further comprising a rotary valve connected to said pneumatic grooves, said rotary valve applying air cyclically to said pneumatic grooves in dependence on rotational angle positions assumed by the sheet transport drum during a rotation of the sheet transport drum.

5. The sheet transport drum according to claim 4, wherein said rotary valve has a first valve part, a second valve part, and a third valve part, and said first, second and third valve parts are disposed so as to be aligned axially and on one another in a sandwich construction.

6. The sheet transport drum according to claim 5, wherein said first valve part and said third valve part form an air outlet and an air inlet of said rotary valve, and said second valve part forms an air passage of said rotary valve.

7. The sheet transport drum according to claim 5, wherein said third valve part is mounted such that said third valve part can be rotated relative to said second valve part during a sheet format changeover of the sheet transport drum, and said second valve part is mounted such that said second valve part can be rotated relative to said first valve part during each drum revolution.

8. The sheet transport drum according to claim 5, wherein said second valve part has a first air control hole and a second air control hole formed therein, said pneumatic grooves of said first comb segment are connected to said first air control hole, and said pneumatic grooves of said second comb segment are connected to said second air control hole, and said first air control hole is disposed offset by a central angle relative to said second air control hole.

9. The sheet transport drum according to claim 8, wherein said first and second air control holes have substantially one and the same radial spacing relative to an axis of rotation of said rotary valve.

10. The sheet transport drum according to claim 8, wherein said first valve part has at least one air control groove formed therein and assigned co-operatively both to said first air control hole and to said second air control hole, so that said first and second air control holes come to overlap said air control groove successively during each drum revolution.

11. The sheet transport drum according to claim 10, wherein said second valve part has at least a third air control hole formed therein, said third air control hole is disposed such that said third air control hole lies on a different imaginary circular arc than said first and second air control holes and

comes to overlap said air control groove during each drum revolution.

12. The sheet transport drum according to claim 11, wherein said first air control hole is formed as a passage hole which is open toward said first valve part and toward said third valve part, and said second air control hole and said third air control hole are each formed as one of an angled hole and an oblique hole.

13. The sheet transport drum according to claim 11, further comprising a row of vacuum nozzles for fixing a sheet trailing edge of a printing-material sheet respectively resting on said sheet support surface and are connected to said third air control hole.

14. The sheet transport drum according to claim 4, further comprising a pneumatic coupling connected to said pneumatic grooves, said pneumatic coupling is configured to be adjustable as a function of a sheet format and has two half-couplings.

15. The sheet transport drum according to claim 14, wherein one of said two half-couplings is mounted such that it can be rotated relative to the other as a function of different sheet format lengths.

16. The sheet transport drum according to claim 14, wherein one of said two half-couplings is an integral constituent part of said rotary valve which applies air cyclically to said pneumatic grooves in dependence on the rotational angle positions assumed by the sheet transport drum during the rotation of the sheet transport drum.

17. The sheet transport drum according to claim 16, wherein said rotary valve contains valve parts resting on one another and are coaxial with one another, and one of said valve parts is formed by said half-coupling that forms said integral constituent part of said rotary valve.

18. A machine processing printing-material sheets, comprising:

a first sheet transport drum having gripper systems describing a gripper flight circle during its rotation and a drum profile deviating substantially from a circular shape with outer contour regions running between said gripper systems and set back from the gripper flight circle; and

a second sheet transport drum disposed immediately after said first sheet transport drum in a sheet transport direction, said second sheet transport drum containing at least one sheet

support surface having pneumatic grooves formed therein, said sheet support surface having a first comb segment with segment prongs and a second comb segment with segment prongs, said pneumatic grooves being introduced into said segment prongs of at least one of said first and second comb segments.

19. The machine according to claim 18, wherein said drum profile is substantially oval or rhomboidal.

20. The machine according to claim 18, further comprising a third sheet transport drum disposed immediately after said second sheet transport drum in the sheet transport direction, said second and third sheet transport drums together form a turner device for turning the printing-material sheets.

21. The machine according to claim 18, wherein the machine is a sheet-fed press having printing units with impression cylinders disposed in-line, and said first sheet transport drum and said second sheet transport drum are disposed between said impression cylinders of said printing units.